

Response to USPTO Office Action dated July 21, 2005
Serial No.: 10/080,310

REMARKS

Claim 6 was objected to because of informalities. However, the offending term "wherein the messages comprises" is not in claim 6 but in claim 4. Claim 4 has been amended for other reasons as set forth below making this objection moot.

Claims 1-22 were rejected under 35 USC §112, second paragraph, as being indefinite. Specifically, claim 1 recited the feature of "the available networks" and there was insufficient antecedent basis for the feature in the claim. Claim 1 has been amended to overcome the objection by removing the offending terms. Claim 1 also recited the feature of "the selected data link", which was also held to have an insufficient antecedent basis. The claim recites "selecting a data link radio" and goes on to state "routing a message to the selected data link radio". Thus, there is antecedent basis for the feature in the claim. The Examiner similarly indicated that the same feature in part c) of claim 1 also recited the feature of "the selected data link network", which was also held to have an insufficient antecedent basis. From the previous argument, it is clear that there is an antecedent basis for this feature. Claim 1 was deemed unclear how the message was formatted for delivery to or from a selected end system and similarly it was unclear how the message was routed to or from a selected end system. The invention comprises a method for exchanging messages between different radios by formatting the message into a language that the receiving radio understands. The claim has been amended to obviate the rejections by formatting a message for delivery to a radio and repeating the step for a next message for delivery to the same or another radio.

Claim 4 has been rejected based on the feature of "wherein the ad hoc messages comprise civil air traffic control information". The Examiner indicates that he does not know what this information consists of and it is unclear as to what this information is from the specification. Claim 4 has been amended to claim the features of the ad hoc messages to comprise "Aeronautical Operational Control (AOC)"

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messages and Air Traffic Control (ATC) messages" as recited on page 36, lines 2-5 and Table 1 of the specification.

Claim 5 was rejected because the Examiner indicated that it is unclear as to the meaning of the word "priority". As indicated in the specification on page 16, beginning on line 11, "priority" relates to the message priority; which message is of higher or lower importance. Claim 5 has been amended to include the term message.

Claim 6 was rejected because the Examiner indicated that he did not know how it would be possible to route a message from a malfunctioning selected data link network. In claim 1 it is clarified that the physical interface is between a host computer and a data link radio. Further, claim one indicates that there may be multiple data link radios. As such, the host computer will have multiple physical interfaces, one for each data link radio. Therefore, the host computer can select an alternate data link radio, if the previously selected radio has failed, and then send or receive messages to or from the alternate radio.

Claim 9 was rejected because it is unclear to the Examiner where the status message is transmitted and for what purpose. The communication status messages feature is described on pages 35, line 17 through page 38, line 8 and in table 1. This section of the specification clearly sets out where the status message is transmitted: the SmartBridge, and the purpose: for data trends 405, alerts 425, equipment health data, AOC messages, and ATC messages. No claim amendments are necessary.

Claims 10 and 22 were rejected similarly to claim 1 because of the feature of formatting the message for delivery to and from the selected data link or end system. Claims 10 and 22 were amended similarly to claim 1.

The general scope of Doviak, as stated in the summary of the invention (column 4, lines 60-63) is to "provide an apparatus and method for transporting data from a

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remote, wireless device to a wired network". Similar text is used throughout the specification to define this scope of the invention (e.g. column 10, lines 61-65 is one example). The specification also states that the invention can handle multiple wireless devices, and a plurality of different wireless communications link protocols and wired network protocols (column 5, lines 10-15). In Doviak a remote wireless device is defined as a laptop computer, personal digital assistant (PDA), a credit card reader, or a global positioning system (GPS) receiver (column 9, lines 17-18). Further, in Doviak a wired network is defined in the context of a Communication Network (reference 10), and examples of a Communications Network are defined as a Token Ring network or an Ethernet Local Area Network (LAN) in column 8 lines 58-60.

In contrast, the present invention defines an apparatus and method for transporting data from various end systems on a vehicle (e.g. aircraft) and a number of different datalink radios and their associated networks. Doviak defines an apparatus and method for transporting data between communication devices, where the communication devices are defined as a remote wireless device and a wired network, while the present invention defines an apparatus and method for transporting data between end systems and a communication device. These applications are distinctly different.

Further, the presently claimed invention defines a communications network in the context of datalink radios and their associated datalink networks. Datalink radios are remote wireless devices (see page 3, line 16 through page 4, line 2). These datalink radios are not anything like a laptop computer, personal digital assistant (PDA), a credit card reader, or a global positioning system (GPS) receiver. Therefore, the associated protocols and message processing rules are not the same, and the apparatus and method described in Doviak cannot be used to solve the problems and requirements addressed in the present patent application. The communications network, as specifically defined in the present patent application, is not a Token Ring network or an

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Ethernet Local Area Network (LAN) therefore, the associated protocols and message processing rules are not the same, and the apparatus and method described in Dowlak cannot be used to solve the requirements addressed by the present invention.

Furthermore, the present invention throughout the specification uses the phrase "RF radio equipment" (page 3, line 16) to refer to specific datalink radios. A datalink radio converts between RF energy and digital data using a pre-defined message set and format. Both civil and military datalink radios are referenced. Civil datalink radios are defined as a Satellite Data Unit (SDU), VHF Data Radio (VDR), and High Frequency Data Radio (HDFR) on page 7, lines 3-4. Military datalink radios, also called military tactical datalink radios, are defined as a MILSTAR SATCOM, MIDS and JTIDS on page 3, line 21 through page 4, line 2. The specification describes the communication networks and protocols associated with these datalink radios. Examples of civil networks are ACARS and ATN (page 3, lines 16-18). An example of a military tactical datalink network is Link-16 (page 3, line 20). For military radios the network and radio names are often used interchangeably such that JTIDS, MIDS and MILSTAR could be used to refer to either the radio or the network. Another example of this is the use of the phrase "Link-16 radio" (page 5, line 3). In order to make this distinction clear, claim 1 has been amended to include data link radios instead of networks.

In the present application, end systems do not have any network interface capability, and are not considered part of the communication network. The present patent application defines an end system as a mission computer (on page 13, line 13 as well as other places in the specification). Other end systems are also implied in the disclosure such as "military end systems" (page 14, lines 11-13) that are interfaced to the mission computer. Another example is an engine system (page 15, line 8) from which the mission computer receives engine data. Each end system does not interface directly with any datalink radio. Typical end systems are not a communications network and they also do not contain a network interface. However, it is desired to take data produced by end systems and send it to a datalink radio for transmission over a datalink

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network. And it is also desired that data received by a datalink radio from a datalink network can be consumed by one or more end systems.

The present invention also allows transferring messages from one datalink radio/network to another datalink radio/network. An example is receiving a message from one military datalink radio/network (i.e. JTIDS) and then reformatting the message to be sent out through a different military or civil datalink radio/network (i.e. MIDS or VDR). This routing structure was not envisioned in Doviak since incoming messages are defined as coming from the remote wireless device and going to the wired network, and outgoing messages are defined as coming from the wired network and going to the remote wireless network. Doviak's patent is based on an internet-based environment and uses internet-based messages and protocols for both the wired network and the remote wireless device. The presently claimed invention is based on the use of data link radios and their associated messages which do not currently use TCP/IP, UDP/IP or any other Internet-based protocol. Also, each end system has its own interface which is also not based on internet-based protocols. So SmartBridge must format messages received from each data link radio into a format required by the receiving end system. Likewise, SmartBridge must reformat messages received from each end system into a format required by the receiving data link radio.

In the present application, each of the end systems has interfaces which are not compatible with the datalink network equipment interfaces. Therefore, an apparatus is needed to bridge between each end system and available datalink radios. The present claims are for an apparatus or method called SmartBridge to accomplish this bridging function. In view of the aforementioned arguments, it is clear that the Doviak patent does not teach or imply the unique claimed features of the present invention.

Claims 1-4, 6-13, and 19-22 were rejected under 35 USC §102(e) as being anticipated by Doviak. As previously stated, the datalink network as claimed are not anything like a laptop computer, personal digital assistant (PDA), a credit card reader,

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or a global positioning system (GPS) receiver as specified in Doviak. Therefore, the associated protocols and message processing rules are not the same, and the apparatus and method described in Doviak cannot be used to transmit and receive the civil and military messages as specifically called for in the present claims.

As previously stated, the physical interfaces between end systems and data link radios are not anything like a Token Ring network or an Ethernet Local Area Network. The physical interfaces for end systems and data link radios specified in the present claims are MIL-STD-1553, High Speed Physical, and ARINC 429 (page 24, line 6 through page 25, line 8). Furthermore, the definition for a Remote Network Controller (RNC) and Mobile Data Controller (MDC) and their associated protocols and message processing rules in Doviak are not the same, and cannot be used for the physical interfaces addressed in the claimed invention for end systems and data link radios.

The Remote Network Controller (RNC) and Mobile Data Controller (MDC) format messages in accordance with the protocols and methods associated with a Token Ring network or an Ethernet Local Area Network, or more specifically for a packet data environment such as a TCP/IP network (as specified in Doviak at column 3, lines 25-26). The present application defines message formatting and processing for a number of airborne network protocols (A618, A619, A658, TACNET, TP4, CLNP/RP, 8208 and 8208 AVPAC) defined on page 22, line 11 through page 24, line 4, and also on page 29, line 5 through page 32, line 5. The definition for a RNC and MDC and their associated protocols and message processing rules (as specified in Doviak) are not the same, and cannot be used for the message formatting and processing addressed in the present application.

The intended scope of the Doviak patent is routing between a plurality of incompatible Token Ring network or Ethernet Local Area Networks, and among a

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plurality of laptop computers, personal digital assistants, credit card readers, or global positioning system (GPS) receivers, which implies a selection system and criteria related to those networks and devices. The present application defines routing between a plurality of incompatible civil and military datalink radios which implies a completely different selection system and criteria. Therefore, the associated protocols and message routing rules are not the same, and the apparatus and method described in Doviak cannot be used to dynamically route the civil and military data link messages addressed in the present patent application.

Claims 5, 18, 14-16 and 17 were rejected under 35 USC §103(a). All of these claims are dependent claims and due to the allowability of the independent claims, these claims are also allowable.

The final request from the Examiner was that the Applicant isolate the support for the structure relied upon for the means plus function language in the claims. The first recitation of a means plus structure is in claim 1 for the "means to transmit and receive messages". This is a communication system which is explained in almost every page in the specification. However, in several places, like page 13, line 2 and page 16, line 3, the specification calls for a communications network. The same feature of "a means to transmit and receive" is also in claim 22 and the same definition controls. In addition, claim 22 claims the feature of a "means for formatting" which is explained again throughout the text of the specification, however the text on page 7, line 10 through page 8, line 10 sets out the formatting steps that the claims envision through software or an on-board computer system.

Having responded to each and every objection and rejection raised by the Examiner, it is believed that the patent application is now in condition for allowance, and such allowance is respectfully requested. If the Examiner has any questions or suggestions for expediting an allowance in this matter, the Examiner is invited to call the undersigned collect.

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The Commissioner is authorized to charge any fees or credit any overpayment under 37 CFR §§ 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. 01-1125.


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